# NAAPO (North American AstroPhysical Observatory)

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## NASA TO CONSIDER UPGRADING BIG EAR FOR SETI PROGRAM

Word has just come that Bernard Oliver is approaching the Ohio State University Research people (through Jack Hollander, V.P. for Research at OSU) about the possibility of upgrading Big Ear and using it for dedicated SETI work. It seems he is asking OSU to fund a design/feasabiIity study to determine what upgrades are needed and how much they might cost.

Dixon and Kraus are meeting soon with Hollander to discuss this matter. We will keep tuned to this frequency.

## NAAPO GETS A SOUTH AMERICAN CONNECTION?

We have just received a letter from Guillermo A. Lemarchand, an advanced student of physics it the University of Buenos Aires. He recently coordinated an interdisciplinary symposium on Intelligent Life in the Universe.

He speaks of a pair of 30 meter antennas of the Argentine Institute of Radioastronomy. It will be interesting to see if part of the Big Ear SETI program can be placed in the southern hemisphere which lies forever below our horizon. We encourage Guillermo to keep in touch with us. He certainly goes onto the NAAPO mailing list.

## HOPPER AT OSU -- TELLS HOW IT IS

Rear Adm. Grace Hopper spoke to a packed audience at OSU last Thursday as part of the Department of Computer and Information Science 20th anniversary celebration. She brought with her some of the wisdom of her 90 years and career in computer related fields for the Navy and computer manufacturers. She is presently a consultant for Digital Equipment Corporation.

Dixon-R and Bolinger-J attended the lecture and report that in addition to passing out nano-second samples she explained how to visualize pico-seconds. It is approximately the thickness of an ordinary bit of ground black pepper that light travels in one pico-second.

Of note for the readers of this account are a few quotes appropriate to the activities of Big Ear and its intrepid founder, John D. Kraus. These should hang alongside JDK's Law of Bureaucratic Accomplishment.

> "People are allergic to change. The people who say, 'but we've always done it this way', are the most dangerous."
>
> "If an idea is a good one, and you have walked all the way around it, DO IT. It is easier to apologize later than to get permission before!"
>
> "The value of computerized information has not been determined. Some information is good forever, some is good for a day, some is never good."

"You MANAGE things. You LEAD people!"

## 7 FEB WORKING SESSION BULGES

In attendance: Mikesell, Abbott, Dixon, Bolinger, Abel, Helwig-R, Mitchell, *James*, *Hain*, *Latta*, *Boyd*, Barnhart

A busy agenda kept the 7 Feb working session moving for a roomfull of volunteers. Four new volunteers attended and began to get a look at what happens at a Big Ear working session. Herbert James and Tom Hain both responded to the Olentangy News article and volunteered their time and effort to the cause. Both seemed to see ways in which their interests and talents will fit in with the projects of the consortium. Greg Latta and Darwin Boyd drove down from Kent Ohio where both are students in the Physics Department at Kent State University. Greg is a ham and both expressed interest in what both we and they have to offer.

Mikesell reports he is continuing the winter projects at the observatory. He is nearing the completion of the fence at the east side of the telescope and continuing the assembly of the transmission to the cart drive motor. Since the power supply fire in the focus room all electronics have been shut down. The air conditioning and dehumidifier operations are continuing. Herb James began to see some opportunities for fitting into the on-site task list.

Carol Abbott reports that on top of a very successful week at her company demonstrating a working hydraulic system, she has finally gotten a handle on the cart motion control problems. The time has come to get the specs out to the subcontracting volunteers to get the system under development. She reports that this will be a good time to inventory the surplus material for possible transfer of usable quantities to the consortium. Her boss seems to be happy. It looks like Abel and Barnhart will make the trip to Lancaster in the near future to do the job.

Dixon and Bolinger report that the two new persons at Dreese Labs Radobs Office are working well. Andrea Fee seems to bring a quick recognition of what needs to be done and the ability to get it done -- somehow. Bob Dixon's desk too has seen the light of day for the first time in recent memory. Amazing accomplishment, Andrea!

Britt Jensen has begun the wiring of the phase detector cards and should have them

finished off in the next few weeks.

The big hold-up at Dreese is the board project for the synthesizer interface. Until the boards are fabricated progress is at a standstill. It seems the hold-up on this aspect of the problem is the inability to come up with a quick netlist for the automated board design equipment. It is a slow, laborious job to be done by hand and the person doing it is catching it in his off time, which is in short supply. We should have specified this as part of the output of the CAD/CAM program that did he circuit layout. Until we get this ironed out, we are hung.

Wavetek finally decided the bandpass filter originally specified last year is impossible to build so Jim Bolinger negotiated a revised specification and they are delighted. It should arrive within a few weeks.

We still need the services of a chart recorder guru. Inking problems seem to be inundating us with excess ink and no readable records. ANY VOLUNTEERS?

Dixon contacted the various telephone companies and determined that we can not likely afford the cost differential to get a number for which it would be a local call both to the Franklin County exchanges as well as the Delaware County exchanges. This is too bad but the money is just not there.

The WRFD situation still smolders. There seems to be little hope of getting any information out of the FCC about the case. "Bureaucracy reigns supreme" --Dixon. The Delaware Planning Commission seems to have decided to deny the proposed siting for the transmitter. More as things develop.

Dixon reports five speaking engagements coming up in the near future. They all involve opportunities to extol Big Ear and the work thereof.

Barnhart goes before the Upper Arlington Chamber of Commerce on 3 Feb. to let them know what value there is in basic research in their back yard.

Meeting adjourned around noon for a grand tour for the new volunteers.

NEXT WORKING SESSICN: Feb 2l, 1987 10:00 am at Big Ear

## BARNHART DOES NAAPO AT KENT STATE

A 29 January seminar at Kent State University carried the message of NAAPO to the Physics Department there and stirred some interest in volunteering among at least two of the graduate students. Gregory Latta and Darwin Boyd responded to the opportunity and came to the 7 Feb working session it Big Ear to see if what Barnhart said had any truth to it.

It was a valuable experience for me (PEB) because I had not visited this campus before and I enjoyed the opportunity [to] become acquainted with some of the faculty and see what they are about in that end of the state. They do not seem to be able to scratch up a very strong undergraduate enthusiasm, though mention of a SPS field trip to Big Ear was readily entertained. We may see some of them down this way before long.

I continue to be amazed at the lack of awareness of the tremendous contributions to cosmology made by radio astronomy. It seems that somewhere we have not adequately spread the message. We have a real job to do.

## POWER SUPPLY PROBLEM CITED

Following a fire alarm which brought the Liberty Township's finest to our gates without an identifiable key, it was discovered that a power supply approximately 1 meter from the smoke detector had fried some insulation on a wire, triggering the alarm. While this is a good test of the alarm system, it is not really the desirable state one wants to live with in a largely unmanned installation.

Discussion at the working session centered about the possibility of redesigning the power distribution system in the focus room. Several problems have been encountered over the past year with power supply interlocks and multi-supply operation. It seems the time has come to begin consideration of replacing some of the older supplies with modern, upgraded equipment. We are still in the preliminary talking stages, but it seems something will have to be done before too long.

## THREE MAJOR PROBLEMS FOR NAAPO

Technology continues to move ahead. Most of us who carry out tasks for the radio observatory are aware of what is possible and what is desirable in the way of new design and construction. Over the past few months while discussing problems of a shut-down radio telescope the pipe dreams and wish lists have begun to well up. The suggestion has been made that the farming out of these desirable additions or improvements to NAAPO member institutions for project type application is a good idea.

Project 1: Design and construction of one or more 1420 MHz calibration oscillators.

This instrument would be used to calibrate the receiver/horn combination and to assure that the system is operating to specification. In portable form it would provide a technique to assess the horn pattern and be a quick test for the front end electronics.

There is some information and possible design ideas available among the staff members. Those interested in this project should contact either Jim Bolinger or Phil Barnhart through NAAPO Headquarters.

Project 2: Redesign and construction of the Dicke Switch, Continuum Phase Detector, Multi-channel Phase Detector and Switch Driver.

These items are ripe for updating and modernization. It would be desirable to incorporate recent advances in technology such as PIN diode as well as eliminate some of the older tube technology.

For information contact Jim Bolinger through NAAPO Headquarters.

3. System status monitoring program.

We will soon be to the point with the 11/23 that it works for its data taking and analysis purposes. However, it also has the capability to monitor many things for normalcy, as we have designed them into the system. Someone needs to analyze the whole observatory system and choose those quantities which are important to monitor and perhaps control. This could be things like power line voltage (all

phases), power supply voltages, wind and weather conditions, intrusion alarm, room temperature and humidity, equipment temperature, water in the cable trays, chewing gum under the tables, etc.

Then, when we know what is desired, someone has to install the sensors and wire everything neatly into the 11/23. Then someone needs to write the program to monitor all this and respond appropriately to non-normal indications. The project will require a lot of knowledge about [what] is actually going on in the whole system. This would be a good project for a NAAPO institution (or two). The project should start right now!

-- Dixon-R

## HELWIG PROPOSES BIG EAR EDUCATION PROGRAM

Dick Helwig proposed at the last working session that we embark on a two pronged education program at Big Ear. His suggestion is to operate a regular field trip opportunity to local schools (as a start) and a pair of summer enrichment programs to interested students.

The field trips would provide school groups a tour of the facility and some educational discussion with video presentation of the research work being carried out at the observatory. Arrangements would be made through the Education Officer and directed by him.

The summer enrichment programs would take on the day camp format with a number of activities and classes on site and alternative site experiences, such as trips to the Otterbein planetarium and observatory.

Those interested in development and participation in these programs may contact Dick through the NAAPO Headouarters.

## ZONING BOARD RECOMMENDS DENIAL TO WRFD

The Delaware County Zoning Board voted at their 27 Jan meeting to recommend DENIAL of the WRFD proposal to move a 50kW transmitter to a Berlin Township site just 2 miles from Big Ear. We will have to hold our breaths until the final decision is reached. The RADOBS stands to lose much to the move, probably more than any other group should the relocation be approved.

## NOTED IN PASSING - -

THE "TITANIC" WAS BUILT BY PROFESSIONALS.

The "Ark" was built by amateurs!

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